

**MARKED-UP VERSION****IN THE SPECIFICATION:**

Please amend the specification as follows:

Add, on line 1 page 1, after the title:

The application claims priority from PCT/RU98/00301, filed September 24, 1998 claiming priority from Russian Application No. 91116386, filed September 30, 1997, and the contents of both references are herein incorporated by reference.

**IN THE CLAIMS:**

Please amend claims as follows:

**1. (presently amended) An X-ray absorbing material comprising:**

a matrix with a fixed X-ray absorbing metal-containing filler in the form of dispersed particles, wherein said filler material is a poly-dispersed mixture that has been segregated by intermixing and that contains metallic particles having a size between  $10^{-9}$  and  $10^{-3}$  m fixed in a textile base that serves as a matrix; and wherein the particles are bonded to the surface of and embedded in said textile base, and where the density of the X-ray absorbing material as a whole, given that the X-ray absorbing properties are equal to those of the material used for the particles of the X-ray absorbing filler, is defined by the relation:

$$\rho_m = (0.01 - 0.20)\rho_p,$$

where  $\rho_m$  is the density of the X-ray absorbing material as a whole, and

$\rho_p$  is the density of the material used for the particles of the X-ray absorbing filler.

**2. (presently amended) An X-ray absorbing material comprising:**

a matrix with a fixed X-ray absorbing metal-containing filler in the form of dispersed particles, where said filler material is a poly-dispersed mixture that has been segregated by intermixing and that contains metallic particles having a size between  $10^{-9}$  and  $10^{-3}$  m, wherein said particles are surrounded by the volume of a matrix that is made of at least one compound that solidifies under atmospheric pressure, or made of a composition derived from a base of the same compound, and the total mass of the segregated, poly-dispersed mixture consisting of particles of the X-ray absorbing filler is defined by the relation:

$$M = (0.05 - 0.5) m,$$

where  $M$  is the total mass of the segregated poly-dispersed mixture consisting of the X-ray absorbing filler particles, and

$m$  is the equivalent mass of the X-ray absorbing filler material equal in protective properties to mass  $M$ .

3. (presently amended) An X-ray absorbing material comprising:

a matrix with a fixed X-ray absorbing metal-containing filler in the form of dispersed particles, where said filler material is a poly-dispersed mixture containing metallic particles having a size between  $10^{-9}$  and  $10^{-3}$  m, wherein said particles are bonded to an intermediate substrate surrounded by the volume of the matrix formed of at least one compound that solidifies under pressure.

4. (presently amended) An X-ray absorbing material, as defined in claim 3, wherein:

a textile base is used as an intermediate substrate.

5. (presently amended) An X-ray absorbing material, as defined in claim 3, wherein:

a mineral fiber is used as an intermediate substrate.

6. (presently amended) An X-ray absorbing material comprising:

a matrix with a fixed X-ray absorbing metal-containing filler in the form of dispersed particles, where said filler material is a poly-dispersed mixture containing metallic particles having a size between  $10^{-9}$  and  $10^{-3}$  m, wherein said particles are bonded to an intermediate substrate surrounded by the volume of the matrix formed of a composition derived from at least one compound that solidifies under pressure.

**REMARKS**

Claims 1-6 are in the application. No claims are presently allowed.

Claims 1-6 are amended.

Favorable reconsideration is respectfully requested in view of the enclosed amendments and the following representations.

The specification has been amended as shown. No new matter has been added. Support for the amendments is found in the original claims, specification, file history, and drawings.

**1. Rejection under 35 U.S.C. §102/103**

Claims 1-6 stand presently anticipated under §102 and in the alternative as obvious under §103 in view of Hortman U.S. Reg. No. 4,293,598 [hereinafter Hortman].

Regarding Section 4 (last paragraph.), the Examiner argues that the disclosure in Hortman supports an inherency argument, in an attempt to shift the burden of proof. Unfortunately, this is not the case, while *In re Fitzgerald* (1980) allows a limited type of inherency under special circumstances (not met here), and *In re Best* (1977) allows a combination of §102 and §103 jointly or alternatively, the burden on the Examiner is clearly extensive to prove that the resultant product is substantially identical, (MPEP 21112) and this burden has not been met, and cannot be met based upon the single Hortman disclosure applied.

The Court of Appeals for the Federal Circuit clearly understands this steep burden slope, noting that the mere fact that a certain thing may result from a given set of circumstances is not sufficient. *In re Robertson*, 169 F.3d 743, 745, 49 U.S.P.Q2d 1949, 1050-51 (Fed. Cir. 1999) (MPEP §2112). The mere fact that a certain result or characteristic may occur is insufficient to establish inherency of the result and shift the burden of proof. See *In re Rijckaert* 9 F.3d 1531, 1534, 38 USPQ2d 1955 (Fed. Cir. 1993) (MPEP §2112).

Most importantly, “the Examiner must provide a basis in fact/and or technical reasoning to support

the determination that the allegedly inherent characteristic *necessarily* flows from the teachings of the applied art. *Ex parte Eevy*, 17 USPQ2d 1461, 1464 (Bd. Pat. App. & Inter. 1990), MPEP §2112.

Here, the Hortman reference is directed to a separate matter altogether, namely increasing a B<sup>10</sup> content in a matrix to prevent neutron radiation through a brut-force-type of mass-blocking (col. 6, ln. 25-29), which is substantially different than the present X-Ray radiation filtering and dispersion focus of the invention through the use of less mass and lower amounts of properly spaced mass. These are different radiation streams from different origins, having different properties, and requiring substantially different remediative products, one more massive and one less massive, employing different particles. The teaching differences between the application and Hortman are thus *substantially contradictive* and any asserting of inherency is misplaced absent seductive and inappropriate hindsight with mandated structural changes requiring substantial modification of Hortman to reach the present invention.

The subject matter of the Hortman Patent is in applying B<sup>10</sup> to the neutron absorbing polymeric material. It is well known that neutron radiation and X-ray radiation differ essentially in many ways, requiring different protective measures. (For example X-rays are blocked by air/atmosphere of a certain depth, while neutron activated B<sup>10</sup> particles are not within standard PVT. Neutron radiation and X-ray radiation differ in origin, penetration apility, physical process of interaction with other materials (wave vs. particle) etc. Neutron Radiation (from B<sup>10</sup> particles) is a stream of particles (neutrons) that are formed as a result of atomic nuclear division of radio-neucleid substances (i.e. materials emitting particles as radiation). X-Ray radiation is the flow of electromagnetic energy generated by an external-internal transition of electrons (i.e. formed by a large spark or large electromagnetic energy source (not a radioactive source)). Neutron radiation is a mass/particle - based radiation. X-Ray radiation is a wave/electromagnetic energy - based radiation. In sum, Boron<sup>10</sup> particles cannot operate as X-rays, cannot interact as X-rays do with a select material, and cannot be avoided as X-rays may.

Hortman, is directed to, and is supposed to solve, a completely different technical task then the present invention, namely to create protection from a neutron particle stream by increasing/packing the contents (overall mass) of an multi-layer absorbing filter. This is in stark contrast to the problem solved by

the present invention which proves for a decrease in the contents of an active absorbing filter while.

The Examiner, on page 3, lines 8-9 incorrectly states that "Hortman et al. is directed to X-ray absorbing sheet articles and teaches per Fig. 2 a neutron absorbing article 11 that . . ." This is incorrect. Hortman is directed to, teaches about, suggests involving, and discusses Neutron Radiation and the use of a very heavy/high mass atom Boron<sup>10</sup> in various compounds not found in the present application.

Hortman discusses and particularly necessitates multi-layer teachings (abstract) requiring the BC (boron carbide) particles to actually extend from each particular layer to serve as anchoring and interlocking means for each subsequent coatings. This means that each coating is actually thinner than the B<sup>10</sup> blocking particles it encloses.(See Figs 2-7 where the particles project from each layer and col. 6 ln 47-49 requiring the same to interlock layers) This also means that any imagined self-organized or poly-dispersed mixture of interacting particles (as claimed) cannot be created by Hortman in the first place, and if created, is destroyed in each successive layer as the particles of the previous layer are prevented from moving in response to the anchoring actions/interactions of previous layer.

Consequently, it is impossible for Hortman to inherently disclose the present X-ray blocking self-organized (poly-dispersed) system of energetically interconnecting (electrically) groups (of multiple particles) to ensure photo-absorption (not neutron particle absorption) as required in the claims (see Specification, page 3 lines 16-20).

Hortman also teaches that the resin fails to hold all the B<sup>10</sup> particles and that some fall off into a collecting bin (Col 5 lines 5-10) for later re-use. Thus, Hortman teaches that no poly-dispersed mixture is created, that the particles of interest do not interact or energetically connect, and are only glued together with resin in a layer (see also col 9, line 52-55 noting as 'highly preferred' phenolic and phenol formaldehyde type resins). The present invention discusses the use of inorganic glues but also water suspensions (specification page 14 last two full paragraphs) since the present invention requires that the matrix allow the particles to interact and space themselves accordingly to achieve the X-ray preventing matrix claimed.

On page 3, last para. of the instant action, the Examiner asserts that while Hortman does not teach

the formula size limitation of the claimed invention, “it is reasonable to presume” (i.e. assume) that the claimed material properties are inherent in the invention.” (emphasis ours). Applicants respectfully note that such presumptions/assumptions are improper, i.e. where and how and on what basis is this presumption made in view of the multiple differences noted herein. There is no similarity with Hortman other than the gross similarity of employing a matrix and particles? The Examiner then states that “similar materials” are used, but leaves out that the B<sup>10</sup> is different from the materials noted in the present invention, that the matrix materials are different, are used differently in different processes and fails to state that the sticky resin of Hortman prevents any particles from forming into “a dispersed self-organized X-ray absorbing” rheology as required in the present invention. Hortman necessarily results in a sharp sand-paper like layer with the particles of B<sup>10</sup>/BC projecting therefrom, while the present invention results in a useful layer of poly-dispersed yet X-ray interconnected particles.

It is specifically noted that Hortman suggests the desirability of and mandates an increase in mass (through the teaching of, and a beneficial result from, an increased particle packing in multiple resin layers) while the present invention teaches the exact opposite, namely that X-ray absorbing effects may be increased using less mass. It is also specifically noted that Hortman lacks any discussion of any mass relationships as presently claimed.

The size range of the particles used is also substantially different. It is noted that Hortman discusses (col 6 ln 29) that the B10 particles are normally from a size sieve 10-sieve 400. The present invention employs particles from  $1 \times 10^{-9}$  to  $1 \times 10^{-3}$  meters (see specification pg 14 second para. et al.). In contrast, Hortman’s sieve 10 is 2mm or  $2 \times 10^{-3}$  (0.002meters) to sieve 400 which is 28 microns or  $28 \times 10^{-6}$  meters. (See col 6 ln 29). See also a quick conversion between English sieve/mesh sizes and International meter-based standards as attached herein from Colin Steward Minchem.

As a consequence, the particle size range in Hortman and the present invention differ by at least  $1 \times 10^{-3}$  meters, or three orders of magnitude. In sum, this three-orders-of-magnitude size range difference between Hortman and the present invention is substantial, prevents any “presumptions” of similar effects or similar materials being drawn, prevents any “substantial similarity” between the cited reference and the

present invention, and renders the present invention as claimed clearly non-obvious in light of the present rejection and the multiple examples in the specification.

It is also noted that Hortman is directed to inflexible sheets of material (col 4 lines 30-45) and where cloth is used, is described as having a substantially (undesirably) diminished flexibility due to the increased weight and mass of each layer. This teaching is contrary to the present invention.

Applicant's respectfully propose that the Examiner's assertions are clearly incorrect for the reasons stated above and that any burden has not been created or shifted to show obviousness much less inherency. It is noted again that (1) Hortman is directed to neutron absorbing sheet articles and teaches a neutron absorbing (not X-ray deflecting) mass-packing product created in a different manner, with different particles having a different size range, and (2) that any assertion that Hortman renders the present claims obvious, while completely failing to each and every any limitation of claims, also fails to create a reasonable assumption that the resultant mechanical properties are the same.

For the reasons noted above, each of these assumptions has been shown to be incorrect upon complete review of the Hortman patent, its teachings, suggestions, and motivations. It is also respectfully suggested that the 'substantially identical' requirement of MPEP §2112 has not been met, and that the claims are non-obvious for that reason alone and for the detailed recitations each contains.

Reconsideration of the claims in light of the above review and discussion is earnestly asserted.

## CONCLUSION

Reconsideration and withdrawal of the rejections is respectfully requested. In view of the foregoing, the application is now believed to be in proper form for allowance and notice to that effect is earnestly solicited. Applicants propose respectfully that they have responded to each and every rejection and objection raised by the Examiner in this case.

While Applicants have respectfully disagreed with the Examiner's rejection of the claims for the above reasons, Applicant's have elected to amend the claims for clarity only, and solely for the purpose

of clarifying the patent application process in a manner consistent with the PTO's Patent Business Goals (PBG), 35 Fed. Reg. 54603 (September 8, 2000). Therefore, it is proposed that this amendment does not narrow the scope of the claims.

No new matter has been added. In the spirit of condensed and streamlined practice, if the Examiner believes that a telephone conference would be of value, he is respectfully requested to call the undersigned counsel at the number listed below for prompt response.

Applicant hereby petitions that any and all extensions of time of the term necessary to render this response timely be granted. COSTS FOR SUCH EXTENSION(S) AND/OR ANY OTHER FEE DUE WITH THIS FEE DUE WITH THIS PAPER THAT ARE NOT FULLY COVERED BY AN ENCLOSED CHECK MAY BE CHARGED TO DEPOSIT ACCOUNT #10-0100.

Date:

10/6/03

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afy

Attached:

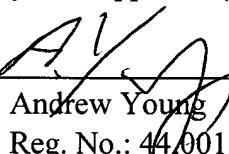
Colin Steward Minchem Sive/Mesh International conversion standards for  
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Attached: Courtesy CLEAN VERSION of the amendments

Respectfully submitted,

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By:

  
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